

I claim:

1. In a signal transmission system, wherein a first data stream is being transmitted, the first data stream having a first data stream header, the first data stream header having data stream priority information, a method for suspending and resuming transmission of the first data stream comprising the steps of:

- receiving a second data stream having a second data stream header, the second data stream header having data stream priority information;
- determining a first data stream priority from the first data stream header;
- determining a second data stream priority from the second data stream header;
- comparing the first data stream priority with the second data stream priority;
- preserving data stream transmission order using a priority sorting mechanism;
- fragmenting the first data stream without creating a fragment header in response to a higher second data stream priority;
- suspending transmission of the first data stream in response to a higher second data stream priority;
- transmitting the second data stream; and
- fluidly resuming transmission of the first data stream after transmitting the second data stream in accordance with the priority sorting mechanism.

1 6. The method of claim 3, wherein the comparing step further comprises the
2 steps of:

3 determining a first data stream priority from the first data stream header;
4 determining a second data stream priority from the second data stream header; and
5 preserving data stream transmission order using a priority sorting mechanism.

1 7. The method of claim 2, wherein each data stream contains no header.

1 8. The method of claim 7, wherein each data stream comprises a special flag.

1 9. The method of claim 8, wherein the step of comparing the first data stream
2 priority includes evaluating a first data stream priority value that is included in a first data
3 stream special flag.

1 10. The method of claim 8, wherein the step of comparing the second data
2 stream priority includes evaluating a second data stream priority value that is included in a
3 second data stream special flag.

1 11. The method of claim 8, wherein the special flag indicates the start of a data
2 stream.

10 sorting mechanism.

17. In a signal transmission system wherein a first data stream transmission is in progress, the first data stream having a first data stream priority, a method for suspending and resuming transmission of the first data stream comprising the steps of:

- receiving a lower-priority second data stream having a second data stream suspend-flag;
- determining a transmission priority order from the suspend-flag using a predetermined priority sorting mechanism;
- suspending transmission of the first data stream in response to the data stream suspend-flag;
- transmitting the lower-priority second data stream; and
- fluidly resuming transmission of the first data stream after transmitting the lower-priority second data stream in accordance with the predetermined priority sorting mechanism.

18. The method of claim 17, wherein each data stream comprises a header.

19. The method of claim 18, wherein the first data stream priority is included in the first data stream header.

20. The method of claim 18, wherein the second data stream priority is included in the second data stream header.

1 21. The method of claim 18, wherein the suspending step further comprises the
2 steps of:
3 interrupting transmission of the first data stream;
4 fragmenting the first data stream;
5 creating a header for each fragment of the first data stream, the header having data-
6 stream transmission-priority information in accordance with the predetermined priority
7 sorting mechanism.

1 22. The method of claim 17, wherein each data stream contains no header.

1 23. The method of claim 22, wherein each data stream comprises a special flag.

1 24. The method of claim 23, wherein the first data stream priority is included in
2 the first data stream special flag.

1 25. The method of claim 23, wherein the second data stream priority is included
2 in the second data stream special flag.

1 26. The method of claim 23, wherein the special flag indicates the start of a data
2 stream.

1 27. The method of claim 23, wherein the special flag indicates the start of a
2 fragment.

- 1 28. The method of claim 23, wherein each data stream has a 12-bit base.
- 1 29. The method of claim 23, wherein each data stream has a 16-bit base.
- 1 30. The method of claim 23, wherein each data stream has an n -bit base,
2 wherein n is optimized to maximize the efficiency based on the expected distribution of
3 frame lengths and the number of special characters.
- 1 31. The method of claim 23, wherein the suspending step further comprises the
2 steps of:
3 interrupting transmission of the first data stream; and
4 fragmenting the first data stream without creating significant additional overhead.

1 32. A method for suspending and resuming transmissions of multiple data
2 streams comprising the steps of:
3 comparing data stream priorities;
4 preserving data stream transmission information using a predetermined priority
5 sorting mechanism;
6 suspending higher priority data streams;
7 transmitting lower priority data streams; and
8 fluidly resuming transmission of higher priority suspended data streams in
9 accordance with the data stream transmission information preserved by the predetermined
10 priority sorting mechanism.

1 33. In a signal transmission system, wherein a first data stream is being
2 transmitted, the first data stream having a first data stream priority, a system for
3 suspending and resuming transmission of the first data stream comprising:
4 a second data stream having a second data stream priority; and
5 a processor having a priority sorting mechanism, the priority sorting mechanism
6 configured to determine data stream transmission order without creating significant
7 additional overhead, the data stream transmission order determined as a function of the
8 first data stream priority and the second data stream priority, the processor configured to
9 selectively suspend the first data stream in response to the data stream transmission order
10 determined by the priority sorting mechanism, the processor further configured to transmit
11 the second data stream upon suspension of the first data stream, the processor further

12 configured to resume transmission of the first data stream after transmission of the second
13 data stream.

1 34. The system of claim 33, wherein the first data stream comprises a header
2 having the first data stream priority.

1 35. The system of claim 33, wherein the second data stream comprises a header
2 having the second data stream priority.

1 36. The system of claim 33, wherein the priority sorting mechanism is a
2 stacking mechanism, wherein the data stream transmission order is determined on a first-in
3 last-out basis.

1 37. The system of claim 33, wherein the first data stream priority is higher than
2 the second data stream priority.

1 38. The system of claim 33, wherein the first data stream priority is not higher
2 than the second data stream priority.

1 39. The system of claim 33, wherein each data stream contains no header.

1 40. The system of claim 39, wherein each data stream has a 12-bit base.

1 41. The system of claim 39, wherein each data stream has a 16-bit base.

1 42. The system of claim 39, wherein each data stream has an n -bit base,
2 wherein n is optimized to maximize the efficiency based on the expected distribution of
3 frame lengths and the number of special characters.

1 43. The system of claim 39, wherein the first data stream comprises a first data-
2 stream special flag having the first data stream priority.

1 44. The system of claim 43, wherein the first data-stream special flag is
2 configured as a first data stream opening flag.

1 45. The system of claim 44, wherein the first data-stream special flag is further
2 configured as a data stream suspend enable flag.

1 46. The system of claim 43, wherein the first data-stream special flag is
2 configured as a first data stream continuation flag.

1 47. The system of claim 43, wherein the first data-stream special flag is
2 configured as a pre-defined universal continuation flag.

1 48. The system of claim 39, wherein the second data stream comprises a second
2 data-stream special flag having the second data stream priority.

1 49. The system of claim 48, wherein the second data-stream special flag is
2 configured as a second data stream opening flag.

1 50. The system of claim 49, wherein the second data-stream special flag is
2 configured as a data stream suspend enable flag.

1 51. The system of claim 48, wherein the second data-stream special flag is
2 configured as a second data stream continuation flag.

1 52. The system of claim 48, wherein the second data-stream special flag is
2 configured as a pre-defined universal continuation flag.

1 53. The system of claim 39, wherein the priority sorting mechanism is a
2 stacking mechanism, wherein the data stream transmission order is determined on a first-in
3 last-out basis.

1 54. The system of claim 39, wherein the first data stream priority is higher than
2 the second data stream priority.

1 55. The system of claim 39, wherein the first data stream priority is not higher
2 than the second data stream priority.

1 56. In a signal transmission system, wherein a first data stream is being
2 transmitted, the first data stream having a first data stream priority, a system for
3 suspending and resuming transmission of the first data stream comprising:
4 a second data stream having a second data stream priority;
5 means for determining data stream transmission order without creating significant
6 additional overhead, the data stream transmission order determined as a function of the
7 first data stream priority and the second data stream priority;
8 means for selectively suspending the first data stream in response to the data stream
9 transmission order determined by the priority sorting mechanism;
10 means for transmitting the second data stream upon suspension of the first data
11 stream; and
12 means for transmitting the first data stream after transmitting the second data
13 stream.

1 57. The system of claim 56, wherein the first data stream comprises a header
2 having the first data stream priority.

1 58. The system of claim 56, wherein the second data stream comprises a header
2 having the second data stream priority.

1 59. The system of claim 56, wherein the first data stream priority is higher than
2 the second data stream priority.

1 60. The system of claim 56, wherein the first data stream priority is not higher
2 than the second data stream priority.

1 61. The system of claim 56, wherein each data stream contains no header.

1 62. The system of claim 61, wherein the first data stream comprises a first data-
2 stream special flag having the first data stream priority.

1 63. The system of claim 62, wherein the first-data stream special flag is
2 configured as a first data stream opening flag.

1 64. The system of claim 63, wherein the first-data stream special flag is further
2 configured as a data stream suspend enable flag.

1 65. The system of claim 62, wherein the first-data stream special flag is
2 configured as a first data stream continuation flag.

1 66. The system of claim 62, wherein the first-data stream special flag is
2 configured as a pre-defined universal continuation flag.

1 67. The system of claim 61, wherein the second data stream comprises a
2 second-data stream special flag having the second data stream priority.

1 73. The system of claim 61, wherein the first data stream priority is not higher
2 than the second data stream priority.

74. In a signal transmission system, wherein a first data stream is being transmitted, the first data stream having a first data stream header, the first data stream header having data stream priority information, a system for suspending and resuming transmission of the first data stream comprising:

means for receiving a second data stream having a second data stream header, the second data stream header having data stream priority information;

means for determining a first data stream priority from the first data stream header;

means for determining a second data stream priority from the second data stream header;

means for comparing the first data stream priority with the second data stream priority;

means for preserving data stream transmission order using a priority sorting mechanism;

means for fragmenting the first data stream without creating a fragment header in response to a higher second data stream priority;

means for suspending transmission of the first data stream in response to a higher second data stream priority;

means for transmitting the second data stream; and

means for fluidly resuming transmission of the first data stream after transmitting the second data stream in accordance with the priority sorting mechanism.

1 75. In a signal transmission system wherein a first data stream transmission is
2 in progress, a system for suspending and resuming transmission of the first data stream
3 comprising:

4 means for receiving a second data stream having a suspend-flag;

5 means for comparing the first data stream priority with the second data stream
6 priority;

7 means for preserving data stream transmission order using a priority sorting

8 mechanism;

9 means for suspending transmission of the first data stream in response to a higher
10 second data stream priority;

11 means for transmitting the second data stream; and

12 means for fluidly resuming transmission of the first data stream after transmitting
13 the second data stream in accordance with the priority sorting mechanism.

1 76. The system of claim 75, wherein each data stream comprises a header.

1 77. The system of claim 76, wherein the first data stream priority is included in
2 the first data stream header.

1 78. The system of claim 76, wherein the second data stream priority is included
2 in the second data stream header.

1 79. The system of claim 76, wherein the comparing means further comprises:
 2 means for determining a first data stream priority from the first data stream header;
 3 means for determining a second data stream priority from the second data stream
 4 header; and
 5 means for preserving data stream transmission order using a priority sorting
 6 mechanism.

1 80. The system of claim 75, wherein each data stream contains no header.

1 81. The system of claim 80, wherein each data stream comprises a special flag.

1 82. The system of claim 81, wherein the first data stream priority is included in
 2 the first data stream special flag.

1 83. The system of claim 81, wherein the second data stream priority is included
 2 in the second data stream special flag.

1 84. The system of claim 81, wherein the special flag indicates the start of a data
 2 stream.

1 85. The system of claim 81, wherein the special flag indicates the start of a
 2 fragment.

1 90. In a signal transmission system wherein a first data stream transmission is
2 in progress, the first data stream having a first data stream priority, a system for suspending
3 and resuming transmission of the first data stream comprising:

4 means for receiving a lower-priority second data stream having a second data
5 stream suspend-flag;

6 means for determining a transmission priority order from the suspend-flag using a
7 predetermined priority sorting mechanism;

8 means for suspending transmission of the first data stream in response to the data
9 stream suspend-flag;

10 means for transmitting the lower-priority second data stream; and

11 means for fluidly resuming transmission of the first data stream after transmitting
12 the lower-priority second data stream in accordance with the predetermined priority sorting
13 mechanism.

1 91. The system of claim 90, wherein each data stream comprises a header.

1 92. The system of claim 91, wherein the first data stream priority is included in
2 the first data stream header.

1 93. The system of claim 91, wherein the second data stream priority is included
2 in the second data stream header.

1 94. The system of claim 91, wherein the suspending means further comprises:
 2 means for interrupting transmission of the first data stream;
 3 means for fragmenting the first data stream;
 4 means for creating a header for each fragment of the first data stream, the header
 5 having data-stream transmission priority information in accordance with the predetermined
 6 priority sorting mechanism.

1 95. The system of claim 90, wherein each data stream contains no header.

1 96. The system of claim 95, wherein each data stream comprises a special flag.

1 97. The system of claim 96, wherein the first data stream priority is included in
 2 the first data stream special flag.

1 98. The system of claim 96, wherein the second data stream priority is included
 2 in the second data stream special flag.

1 99. The system of claim 96, wherein the special flag indicates the start of a data
 2 stream.

1 100. The system of claim 96, wherein the special flag indicates the start of a
 2 fragment.

1 101. The system of claim 96, wherein each data stream has a 12-bit base.

1 102. The system of claim 96, wherein each data stream has a 16-bit base.

1 103. The system of claim 96, wherein each data stream has an n -bit base,
2 wherein n is optimized to maximize the efficiency based on the expected distribution of
3 frame lengths and the number of special characters.

1 104. The system of claim 96, wherein the suspending means further comprises:
2 means for interrupting transmission of the first data stream; and
3 means for fragmenting the first data stream without creating significant additional
4 overhead.

1 105. A system for suspending and resuming transmissions of multiple data
2 streams comprising:
3 means for comparing data stream priorities;
4 means for preserving data stream transmission information using a predetermined
5 priority sorting mechanism;
6 means for suspending higher priority data streams;
7 means for transmitting lower priority data streams; and
8 means for fluidly resuming transmission of higher priority suspended data streams
9 in accordance with the data stream transmission information preserved by the
10 predetermined priority sorting mechanism.